



Caterpillars in Canola

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Canola is fed upon by many insect and arthropod pests including several species of caterpillars, the immature stage of moths and butterflies. The most potentially damaging caterpillars likely to be found in canola grown in Oklahoma are the army cutworm and the diamondback moth.

Army cutworm (*Euxoa auxiliaris*)

Description and Life History: Army cutworm moths (Figure 1) have a wingspan of 1 to 1½ inches; their forewings are dark gray-brown with several distinct markings and the hindwings are light gray-brown with a whitish fringe. Larvae undergo seven molts and can reach 1½ to 2 inches long when mature (Figure 2). They have a light brownish-gray head with pale brown spots and a pale grayish body with white splotches and a brown-tinged top line. The lower portion of the body has darker, top-lateral stripes and an indistinct band of white splotches. Caterpillars curl up into a tight "C" when disturbed.

Moths migrate to Oklahoma each fall from their summer residence in the Rocky Mountains. They seek bare or sparsely vegetated fields (like a newly prepared field ready for canola planting, or a field that was "dusted in" and had not yet emerged). One moth can lay up to 1,500 eggs. The eggs hatch soon after being deposited. Egg laying activity occurs from August through October which explains why a producer might see different sizes of larvae in a field. Army cutworms feed throughout the winter before they pupate in the soil. Most larvae pupate by mid-late March and moths (also called "millers") begin emerging in April and fly north to the Rocky Mountains to spend the summer.

Damage: High populations of army cutworms can cause severe stand loss in canola if not controlled. Army cutworms get

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their name because they feed at the base of plants, separating the top of the plant from its roots at the crown base (Figure 3). They can cause direct stand loss or cause plants to be stunted and malformed because they are only partially attached to their roots.

Scouting and Management: Army cutworm damage often goes unnoticed through the winter because the caterpillars hide during the day and grow slowly so they don't cause noticeable damage until temperatures warm in the spring. While it might be tempting to apply a "preventive" insecticide, it is not economical to do so because army cutworm infestations are very sporadic. An infestation ultimately depends on the attractiveness of the field during a moth migration. Sampling for army cutworms is a simple and reliable process if done in a



Photo courtesy of Frank Pearis, Colorado State University
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Figure 2.



Photo courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org

Figure 1.



Photo courtesy of Tom Royer, Oklahoma State University

Figure 3.

timely manner. Because they hide below the soil surface during the day, they must be physically disturbed from beneath the soil to assess numbers. Sample a field by stirring or digging the soil to a depth of 2 inches at five or more locations. The cutworms are "greenish grey," and will probably curl up into a tight "C" when disturbed.

The suggested treatment threshold for cutworms in canola is one to two per row-foot. Current recommendations for control of army cutworms in canola are listed in CR-7667, *Management of Insect and Mite Pests in Canola*.

Diamondback Moth (*Plutella xylostella*)

Description and Life History: Diamondback moths are found worldwide and feed on many crops. The adult is a small, gray and brown moth measuring $\frac{1}{2}$ -inch long (Figure 4). When resting, the wings are folded so that they "wrap" around the body. When at rest, male moths have three diamond-shaped markings on the forewings. Female moths lay oval, flattened eggs that measure $\frac{1}{64}$ -inch in groups of one to eight eggs which will hatch in five to six days. One female can lay 150 eggs.

Newly hatched larvae are light green with a green head and become progressively darker green as they mature. They develop through four instars and when full grown, measure about $\frac{1}{2}$ -inch long (Figure 5). One distinct feature of these caterpillars is that they thrash violently back and forth and drop from the plant on a silk strand when disturbed. They pupate in a loose, silken cocoon that they attach to the plant. They can complete a life cycle in about 32 days, depending on temperature. Typically all life stages will be found at the same time.

Damage: Larvae are the damaging stage. When they first hatch, they "mine" between the upper and lower leaf surface, creating small "windowpane" areas on the leaf. As they get larger, they chew through the leaves, creating holes (Figure 6). Small larvae chew small irregular "windowpane" areas on a leaf. As they get larger, they chew entire leaves, leaving only the veins. Although leaf feeding looks bad, it doesn't result in much yield loss. Yield loss in canola is more likely associated with damage to the crown, flowers, and seed pods. Overwintering larvae remain in the crown and can damage shoot buds, causing distorted stems as the plants emerge during spring. Infestations of the crown can easily be mistaken for winterkill. When larvae feed on flowers, they cause them to abort. When they feed on seed pods, the pods may fail to produce seed.

Photo courtesy of Tom Royer, Oklahoma State University



Figure 4.

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Feeding associated with flowers and pods can also cause a delay in plant maturity.

Scouting and Management: Scout for diamondback moth by pulling plants from a 1-square-foot area, beat the collected plants into a white bucket, and count larvae. Larvae that are dangling on the plant from silk threads should also be counted. Take counts in at least five locations to determine the average number of larvae per square foot.

Suggested Treatment Thresholds are:

- No threshold has yet been established for overwintering larvae, but control should be considered if foliage feeding is significant
- 10-15 larvae per square foot during early flowering
- 20-30 larvae per square foot during pod stage

One caution: Diamondback moths are notorious for developing resistance to insecticides, particularly pyrethroids, which are the primary registered insecticides for use in canola. Therefore, check fields after an insecticide application has been made to ensure adequate control has been achieved, and rotate chemical classes if multiple applications are required. Current recommendations for control of diamondback moth larvae in canola are listed in CR-7667, *Management of Insect and Mite Pests in Canola*, which can be obtained online at <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-3045/CR-7667web2009.pdf>



Figure 5.



Figure 6.

Photo courtesy of Merle Shepard, Gerald R. Carner, and P.A.C Ooi, Insects and their Natural Enemies Associated with Vegetables and Soybean in Southeast Asia, Bugwood.org